

1) Find derivative of the function below.

$$f(x) = e^{\tan(3x^5 + 7x^2 - 2x)}$$

$$f'(x) = e^{\tan(3x^5 + 7x^2 - 2x)} \cdot \sec^2(3x^5 + 7x^2 - 2x) \cdot (15x^4 + 14x - 2)$$

2) Given the equation below, find $\frac{dy}{dx}$.

$$2x^4 + 3y^2 = x^2y$$

$$\frac{d}{dx}(2x^4 + 3y^2) = \frac{d}{dx}x^2y$$

$$8x^3 + 6y \frac{dy}{dx} = (2x)(y) + (x^2) \left(\frac{dy}{dx} \right)$$

$$8x^3 + 6y \frac{dy}{dx} = 2xy + x^2 \left(\frac{dy}{dx} \right)$$

$$6y \frac{dy}{dx} - x^2 \left(\frac{dy}{dx} \right) = 2xy - 8x^3$$

$$\frac{dy}{dx}(6y - x^2) = 2xy - 8x^3$$

$$\frac{dy}{dx} = \frac{2xy - 8x^3}{6y - x^2}$$